

MIMO-BASED MULTIUSER OFDM MULTIBAND  
FOR ULTRA WIDEBAND COMMUNICATIONS

Abstract of the Disclosure

A MIMO-based multiuser OFDM multiband of UWB for a short-distance wireless broadband communication is disclosed for the indoor UWB operation. Eleven multi-frequency bands are employed, with each of the multi-frequency bands having 650 MHz bandwidths. A 1024-point IFFT and FFT with 1000 subcarriers are used to carry data and pilot information within each of the multi-frequency bands. The MIMO-based multiuser OFDM multiband of UWB base station communication transmitter with employing eleven antennas can transmit and receive  $N$  users at the same time. One of the modulations including BPSK, QPSK or 16-QAM is employed for a different data rate with scalability in the multi-frequency bands. The transmitting distance between the UWB base station and a user station has been enhanced due to the MIMO system. The maximum transmitting data rate of the MIMO-based multiuser OFDM multiband of the UWB communication system can approximately achieve up to 11 Gbps in the indoor environment.